

# Treatment of Acute Gonorrhoea in Males With Synnematin B

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THE INCREASED sensitization of the population to penicillin has posed the need for a new injectable antibiotic, preferably repository, for the treatment of gonorrhoea. This antibiotic should be effective in both gonorrhoea and syphilis.

Synnematin B, an antibiotic described in 1951 by Gottshall and co-workers (1), was shown to be treponemicidal in vitro and in rabbits by Wheeler and associates (2), in 1957. In the same year, the successful treatment of a case of primary syphilis was also reported (2). The authors have successfully treated two cases of secondary syphilis with the drug. Olson has shown that synnematin B is effective in vitro against species of *Neisseria gonorrhoeae*.

Synnematin B, produced by the mold *Cephalosporium salmosynnematum*, strain 3590 A, is known to be somewhat related to penicillin chemically and in some of its pharmacological properties (3). It is inactivated by penicillinase. The toxicity of this antibiotic is extremely low; doses as high as 5 gm. per kilogram of body weight have been given to experimental animals without adverse effects. No evidence of a sensitizing property has been discovered in individuals treated with synnematin B. Attempts to sensitize laboratory animals to the drug have been uniformly unsuccessful. The

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authors have treated five patients sensitive to penicillin with synnematin B with no adverse reactions (4). Berryman and Fisherman have shown that serum reagins to penicillin G or V do not react with synnematin B or penicillamine (5). Cowan has discussed the place of synnematin B among drugs used in the treatment of syphilis (6).

Because of the marked susceptibility of species of the genus *Neisseria* to synnematin B, a clinical trial of this drug was organized to test its efficacy in the treatment of acute gonorrhoea in males.

The present report covers the treatment of 132 cases of acute gonorrhoea in males, all with clinically diagnosed urethral discharges and positive smears and cultures. Fermentation tests were done on cultures obtained from most patients on the first visit. All of these tests were positive. The patients were treated with a single intramuscular injection of 300,000 units of synnematin B at the time of diagnosis and were asked to return to the clinic at frequent intervals. The results of treatment of these 132 patients were as follows:

	<i>Number of patients</i>
Negative on followup.....	112
Discharge present within 30 days.....	20
Smear and culture negative.....	3
Smear and culture positive.....	17

One patient had syncope a few minutes after the injection of synnematin B. The pulse and blood pressure were normal, and he recovered with rest alone. It was felt that he had suffered a vasomotor syncopal episode with no element of allergy. There were frequent complaints of moderate pain upon injection of the drug.

The criteria employed to decide between treatment failure and reinfection were as follows:

- If patients were symptom free and had negative smears and culture 8 days or later after treatment and subsequently developed symptoms and positive laboratory findings, they were considered to be reinfections.
- Patients whose symptoms or positive laboratory tests, or both, persisted or reappeared within 7 days after treatment were considered to be treatment failures.

The first 45 patients treated were asked to return in 24 hours, and 33 of them did so. Twenty-eight patients had no urethral discharge, and smear and culture were negative. Twenty-three were seen on subsequent visits and remained cured for periods of observation ranging from 7 to 31 days, with the exception of one patient who reappeared 31 days after treatment complaining of a reinfection, the symptoms of which had begun a few days earlier. Four patients had a urethral discharge and a negative smear and culture. These patients became symptom-free and remained so without further treatment. One patient had a urethral discharge and a positive smear and culture at the end of 24 hours.

Without further treatment, this patient became symptom-free and his smear and culture became negative.

An analysis of the results of followup on the 17 patients who had positive smears and cultures after treatment with synnematin B is shown in the table.

Using the same criteria as above, a comparable study of 100 male patients treated with 1,200,000 units of procaine penicillin in aluminum monostearate showed that 8 percent of the group developed a urethral discharge with positive smear and culture within 30 days. One patient in this group was considered to be a treatment failure and the others, reinfections. This group of 100 patients was drawn at random from patients seen in the clinic during the 2 months preceding the start of this synnematin B study.

### Summary and Conclusions

A single injection of 300,000 units of synnematin B was used to treat each of 132 male patients seen in a venereal disease clinic with bacteriologically proved acute gonorrhea. Thirteen percent of this group had a positive

### Results of followup of 17 gonorrhea patients with positive smears after treatment with synnematin B

Patient No.	First visit (date of therapy)	Second visit		Third visit		Fourth visit		Results of treatment
		Days since preceding visit	Smear and culture	Days since preceding visit	Smear and culture	Days since preceding visit	Smear and culture	
	<i>1959</i>							
1	September 21	1	Negative	8	Negative	31	Positive	Reinfection.
2	September 22	28	Positive					Do.
3	September 23	1	Positive <sup>1</sup>	37	Negative			Successful.
4	September 23	15	Positive					Reinfection.
5	September 25	5	do					Failure.
6	September 28	4	Negative	14	Positive			Reinfection.
7	September 28	4	do	33	do			Do.
8	September 30	6	Positive					Failure.
9	October 1	8	do					Do.
10	October 1	1	do					Do.
11	October 1	7	Negative	18	Positive			Reinfection.
12	October 2	5	do	38	do			Reinfection. <sup>2</sup>
13	October 5	3	Positive					Reinfection.
14	October 5	3	Negative	7	Positive	25	Positive	Do.
15	October 7	9	Positive					Reinfection. <sup>3</sup>
16	October 7	7	do					Failure.
17	October 9	16	do					Reinfection.

<sup>1</sup> No additional treatment given.

<sup>2</sup> Discharge from reinfection started 8 days after therapy.

<sup>3</sup> Discharge from original infection stopped 2 days after therapy.

smear and culture within 30 days after treatment. Four percent were considered to be treatment failures.

In a comparable study of patients treated with 1,200,000 units of penicillin, 8 percent of the group developed a urethral discharge with smear and culture positive within 30 days. One patient in this group, constituting 1 percent of the total, was considered to be a treatment failure.

Synnematin B is an injectable antibiotic which appears to have great promise in the treatment of gonorrhea. It has not shown any allergenic properties thus far, even in patients sensitive to penicillin.

It remains to be proved if a single injection of 300,000 units of synnematin B will constitute effective prophylaxis against incubating primary syphilis acquired at the same time as gonorrhea.

Further studies will be undertaken to determine whether a higher dose of synnematin B will result in a lower treatment failure rate.

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#### Commentary

A report of the results of a new injectable antibiotic in the treatment of gonorrhea should be timely and valuable to public health workers. Since synnematin B is not readily available, this paper will be of interest principally to laboratory and clinical research workers in the venereal disease field.

Most of the currently recommended schedules of oral and injectable drugs for the treatment of gonorrhea in males reportedly give treatment failure rates ranging from 1 to 12 percent. The principal problem is to establish actual rates on various drug schedules for gonorrhea in females. It is expected that the fluorescent tagged antibody detection method may establish such findings in studies presently getting underway.—W. G. SIMPSON, *assistant chief, Venereal Disease Branch, Communicable Disease Center, Public Health Service.*

### Nursing Home Aides Trained

Almost 10,000 nursing home aides have been trained since 1959 through coordinated programs sponsored by the American Red Cross, State health departments, and the Public Health Service. The Red Cross has trained 8,000 aides in 32 States, using volunteer instructors. In the same period, eight State health departments, with consultation from the Public Health Service, have trained more than 100 teachers who have in turn instructed some 2,000 aides. The publication, "How To Be a Nursing Aide in a Nursing Home," was used in both programs.